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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,621	11/27/2001	Koichiro Nagar	Q66977	8241
23373	7590	04/07/2004	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			PUTTLITZ, KARL J	
			ART UNIT	PAPER NUMBER
			1621	

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/993,621	Applicant(s) NAGAR ET AL.	
	Examiner Karl J. Puttlitz	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
 4a) Of the above claim(s) 17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3,4,18 and 19 is/are allowed.
- 6) ☒ Claim(s) 5-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

In view of Applicant's amendments and remarks set forth in the Response dated January 20, 2004, claims 1-4, 18 and 19 are allowed over the outstanding rejection under § 103. Claims 5-16 remain rejected under § 103 for the reasons stated below.

For applicant's convenience, the rejection is repeated below:

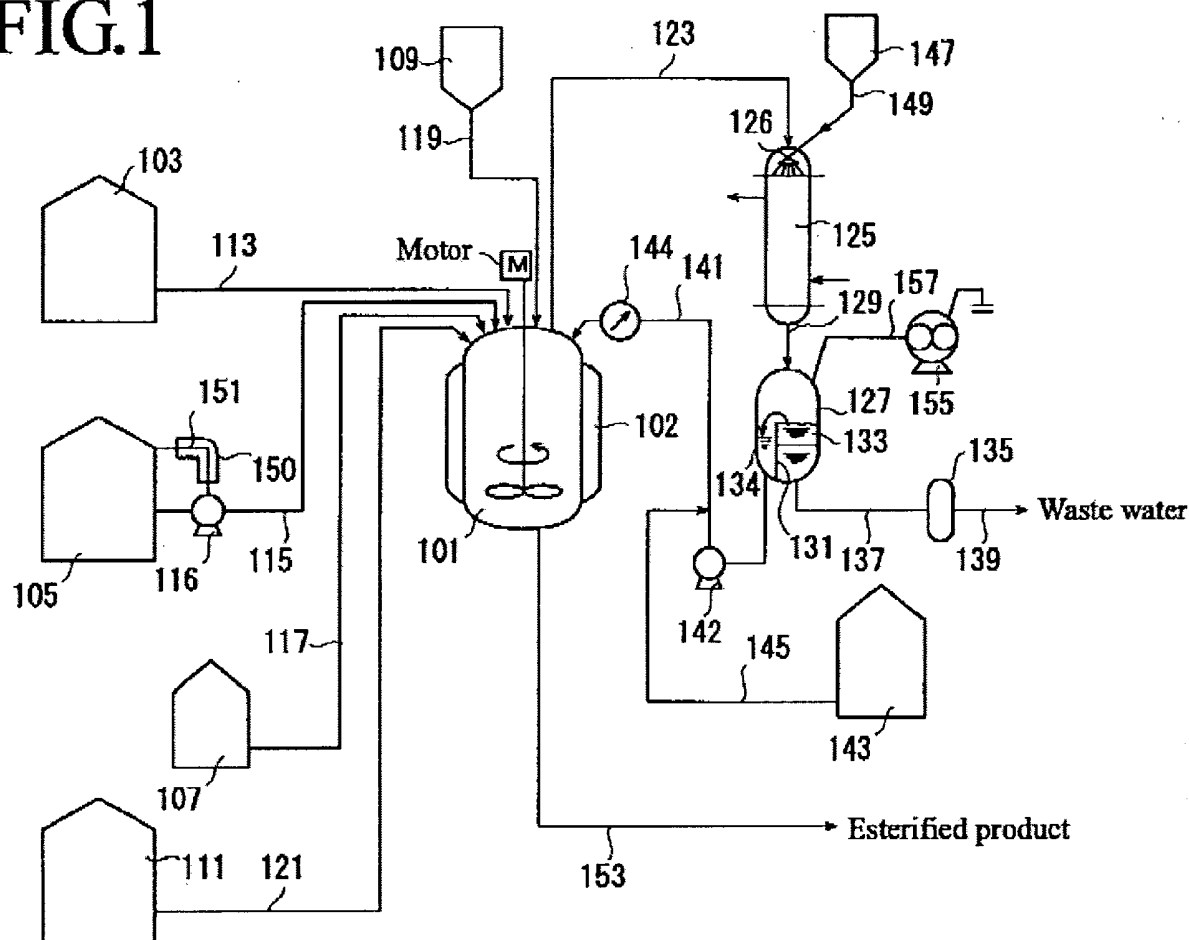
Claims 5-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,265,495 to Hirata et al. (Hirata).

The claims are drawn to a production method of a dehydration reaction product. The following claims are the rejected independent claims:

Hirata teaches a method for the production of an esterified product which comprises esterifying an alcohol with (meth)acrylic acid in a dehydrating solvent in the presence of an acid catalyst and a polymerization inhibitor. See description bridging columns 5 and 6.

Specifically, Hirata discloses an apparatus, as shown in FIG 1:

FIG. 1



which is "(an apparatus) for expelling by distillation a distillate containing reaction-forming water to be formed during the esterification reaction in a reaction system (a reaction tank 101), condensing and liquefying the distillate while preventing the occurrence of gel, separating and removing the reaction-forming water, and returning the rest of the distillate at the solvent circulating speed defined above (not less than 0.5 cycle/hour, preferably in the range of 1 to 100 cycles/hour), a circulation system is provided therein for condensing and liquefying by the action of a antigelling agent a distillate occurring as an azeotropic mixture of reaction-forming water and a

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dehydrating solvent, separating and removing the reaction-forming water (water phase) from the condensed and liquefied distillate, and refluxing the rest of the condensate (a solvent phase mainly containing the dehydrating solvent) back to the reaction tank 101 at the solvent circulating speed mentioned above. To be more specific, the upper part of the reaction tank 101 and the top part of the column of a vertical shell and tube type condenser 125 of the counterflow (or parallel flow) contact type are connected with a pipe 123. The lower bottom part of the condenser 125 and the upper part of a water separator 127 made of SUS are connected with a pipe 129. Inside the water separator 127, a partition plate 131 is formed." See paragraph bridging columns 19 and 20.

The difference between the process described in Hirata and the rejected claims is that Hirata requires that the condenser satisfies the requirement: $0.05 < (B_3/A) < 35$ where A is a capacity (m^3) of said reaction vessel and B is a total length (m) of said connecting pipe on the horizontal basis.

However, absent a showing of unexpected results, the requirement that $0.05 < (B_3/A) < 35$ broadly embraces condensers, and one of ordinary skill would have recognized that the condenser of Hirata necessarily fulfills this requirement. See M.P.E.P. § ("[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)).

In this connection, the examiner invites a showing that Hirata does not embrace the claimed process, i.e., comprises a condenser with the requirement that $0.05 < (B_3/A)$

Again, the difference between the process described in EP 109 and the rejected claims is that EP 109 requires that the condenser satisfies the requirement: $0.05 < (B_3/A) < 35$ where A is a capacity (m^3) of said reaction vessel and B is a total length (m) of said connecting pipe on the horizontal basis.

However, absent a showing of unexpected results, the requirement that $0.05 < (B_3/A) < 35$ broadly embraces condensers, and one of ordinary skill would have recognized that the condenser of EP 109 necessarily fulfills this requirement. See M.P.E.P. § ("[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)).

In this connection, the examiner invites a showing that EP 109 does not embrace the claimed process, i.e., comprises a condenser with the requirement that $0.05 < (B_3/A) < 35$. See M.P.E. P. § 2112 ([T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 USC 103 on '*prima facie* obviousness' under 35 USC 103 jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).").

<35. See M.P.E. P. § 2112 ([T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 USC 103 on 'prima facie obviousness' under 35 USC 103 jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).").

Accordingly, the rejected claims are *prima facie* obvious in view of Hirata since this reference teaches the elements of the claimed invention with a reasonable expectation of success. See M.P.E.P. § 2143, *supra*.

Claims 5-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 989 109 to NIPPON SHOKUBAI CO. LTD. (EP 109).

The rejected claims are given above.

EP 109 also teaches a method for the production of an esterified product which comprises esterifying an alcohol with (meth)acrylic acid in a dehydrating solvent in the presence of an acid catalyst and a polymerization inhibitor. See pages 7-9.

The reference also teaches an apparatus for an esterification reaction in a reaction system, a circulation system is provided therein for condensing and liquefying by the action of an antigelling agent a distillate, and a reaction tank and a tube type condenser connected with a pipe. See Fig 1. and the description at pages 33 and 34.

Accordingly, the rejected claims are *prima facie* obvious in view of EP 109 since this reference teaches the elements of the claimed invention with a reasonable expectation of success. See M.P.E.P. § 2143, *supra*.

Response to Arguments

Applicant argues that neither US '495 nor EP '109 disclose specific information about the configuration of the condenser and the tubesheet. Also Applicant argues that the water separator as is required in accordance with claims 10 - 16 (illustrated in Fig. 4 or Fig. 10 of the present application) is quite different figure from that of US '495 or EP '109. See page 10 of the response.

However, the references suggest these aspects of the claimed invention. For example, US '495 teaches that an apparatus which, as illustrated in FIG. 19 (see above) is composed mainly of a combination of a heat exchanger, a cooling device, and a condenser as means and device for condensing and liquefying the gaseous distillate, a liquid-liquid separator as means and device for dividing the liquefied distillate into two layers, i.e., a water phase and a solvent phase, and separating the layers from each other, a pump as means and device for removing the water phase (reaction-forming water) out of the reaction system, a pump as means and device for returning the dehydrating solvent of the solvent phase back to the reaction system under pressure, and pipes as transportation means and device for interconnecting the component devices may be cited as a concrete example. Further, the means and devices including a reaction system are generally provided with a proper control mechanism (comprising

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various sensors for sensing temperature, pressure, flow volume-flow rate, and liquid level, a main control part for processing information (electric signals) received from the sensors, and issuing commands (electric signals) to operating parts thereby controlling the operating parts, and an operating part effecting required control in accordance with issues from the control part (using temperature adjusting means (e.g., heater), valves for adjusting pressure and flow volume, and level controllers for keeping the liquid level in the reaction tank constant)).

Specifically, the devices which can be used for the various means mentioned above do not need to be particularly limited. Naturally, the devices cited specifically above may be substituted with such devices as are suitably selected among various devices well-known to the art. It is naturally permissible to combine other means and devices known to the art or adopt suitably methods which resort to the alternatives of such other means and devices in place of the devices cited above without departure from the objects and scopes of this invention which consist in expelling the dehydrating solvent from the reaction system by distillation, condensing and liquefying the distillate, and circulating the resultant condensate back to the reaction system. See paragraph bridging columns 14 and 15.

Moreover, EP '109 teaches an apparatus for an esterification reaction in a reaction system, a circulation system is provided therein for condensing and liquefying by the action of a antigelling agent a distillate, and a reaction tank and a tube type condenser connected with a pipe. See Fig 1. and the description at pages 33 and 34.

Thus, the claimed cooling and separating means claimed are prima facie obvious in view of the above disclosure since the claimed devices are taught or suggested by US '495 and EP '109.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl J. Puttlitz whose telephone number is (571) 272-0645. The examiner can normally be reached on Monday-Friday (alternate).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on (571) 272-0646.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1235.

Karl J. Puttlitz
Assistant Examiner


Johann R. Richter, Ph.D., Esq.
Supervisory Patent Examiner
Biotechnology and Organic Chemistry
Art Unit 1621
(571) 272-0646